699-32-76 (C4975)
Log Data Report

Borehole Information:

Borehole:	699-32-76 (C4975)		Site:	South of S-Plant (200 UP-1)	
Coordinates (WA St Plane)		GWL[1] (ft):	220	GWL Date:	12/17/2007
North (m)	East (m)	Drill Date	TOC[2] Elevation	Total Depth (ft)	Type
Unknown	Unknown	11/2007	Unknown	340	Air rotary

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded Steel	N/A	13 3/8	12 3/8	1/2	-2.2	193
Threaded Steel	4.3	10 3/4	9 3/4	1/2	-4.3	340

Borehole Notes:

Logging engineer measured casing using a steel tape and rounding to the nearest 1/16-in.

This borehole was logged in three events. On 11/15/2007, it was logged to a depth of 157 ft, then on 11/27/2007 to a depth of 193 ft, and again on 12/17/2007 to a depth of 340 ft. The zero reference is the ground surface.

Logging Equipment Information:

Logging System:	Gamma 1L		Type: / Serial No.:	SGLS HPGe (70%) / 47TP32211A
Effective Calibration Date:	07/09/07	Calibration Reference:	HGLP-CC-019	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 4N		Type: / Serial No.:	SGLS HPGe (70%) / 45TP22010A
Effective Calibration Date:	09/20/07	Calibration Reference:	HGLP-CC-022, Rev. 1	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	3	4 Repeat
Date	11/15/07	11/15/07	11/27/07	11/27/08
Logging Engineer	McClellan	McClellan	McClellan	McClellan
Start Depth (ft)	157.0	1.0	193.0	150.0
Finish Depth (ft)	1.0	17.0	150.0	154.0
Count Time (sec)	100	100	100	100
Live/Real	R	R	R	R
Shield (Y/N)	N	N	N	N
MSA Interval (ft)	1.0	1.0	1.0	1.0
Log Speed (ft/min)	N/A	N/A	N/A	N/A
Pre-Verification	AL002CAB	AL002CAB	AL003CAB	AL003CAB
Start File	AL002000	AL002157	AL003000	AL003044
Finish File	AL002156	AL002173	AL003043	AL003048
Post-Verification	AL002CAA	AL002CAA	AL003CAA	AL003CAA
Depth Return Error (in.)	1 Low	N/A	N/A	1.5 Low
Comments	No fine gain adjustment made	No fine gain adjustment made	No fine gain adjustment made	No fine gain adjustment made

Log Run	5	6 Repeat		
Date	12/17/07	12/17/07		
Logging Engineer	McClellan	McClellan		
Start Depth (ft)	340.0	192.0		
Finish Depth (ft)	192.0	207.0		
Count Time (sec)	100	100		
Live/Real	R	R		
Shield (Y/N)	N	N		
MSA Interval (ft)	1.0	1.0		
Log Speed (ft/min)	N/A	N/A		
Pre-Verification	DN841CAB	DN841CAB		
Start File	DN841000	DN841149		
Finish File	DN841148	DN841164		
Post-Verification	DN841CAA	DN481CAA		
Depth Return Error (in.)	N/A	2.5 Low		
Comments	Fine gain adjustment made at bottom of borehole before logging began			

Logging Operation Notes:

Data were collected using Gamma 1, HO 68B-3574 and Gamma 4, HO 68B-3573. Pre- and post-survey verification measurements were acquired in the Amersham KUTh-115 field verifier. A centralizer was installed on the sonde. Maximum logging depth was 340.2 ft.

Analysis Notes:

Analyst:	M.J. Legler	Date:	05/22/08	Reference:	GJO-HGLP 1.6.3, Rev. 0

The pre- and post-survey verification spectra met the acceptance criteria for the established systems but verification file AL002CAB had a measurement for the 1461 keV energy line below the lower control limit, AL002CAA had a measurement for the 609 keV energy line above the upper control limit. DN841CAB and DN841CAA had measurements for the full width at half maximum above the upper control limit. DN841CAB had a measurement for the 1461 keV energy line below the lower control limit.

A casing correction for a 1/2-in. thick steel casing was applied during analysis. A water correction factor was applied from 220 ft to total depth of the borehole.

Spectra were processed in batch mode in APTEC SUPERVISOR to identify peaks and count rates. Concentrations were calculated for each system using an EXCEL template identified as G1LJuly07.xls and G4NSept07.xls using efficiency functions and corrections for casing, dead time, and water as determined by annual calibrations.

Results and Interpretations:

The only manmade radionuclide detected was Cs-137, which was detected at 154 ft and 245 ft near its respective MDL. Inspection of individual spectra at these depths, indicate that these detections are statistical fluctuations associated with the processing software and are not considered valid.

The KUT plots indicate good repeat ability. Radon is exhibited during the first log run (157 ft–1 ft), as shown by an elevated 609 keV peak relative to the 1764 keV peak.

List of Log Plots:

Depth Reference is Ground Surface

Manmade Radionuclides (3 pages)
Natural Gamma Logs (3 Pages)
Combination Plot (3 pages)
Combination Plot (0-340 ft)
Total Gamma & Dead Time (3 pages)
Repeat Section of Natural Gamma Logs (1–17 ft)
Repeat Section of Natural Gamma Logs (150-154 ft)
Repeat Section of Natural Gamma Logs (192–207 ft)

[1] GWL–groundwater level
[2] TOC-top of casing

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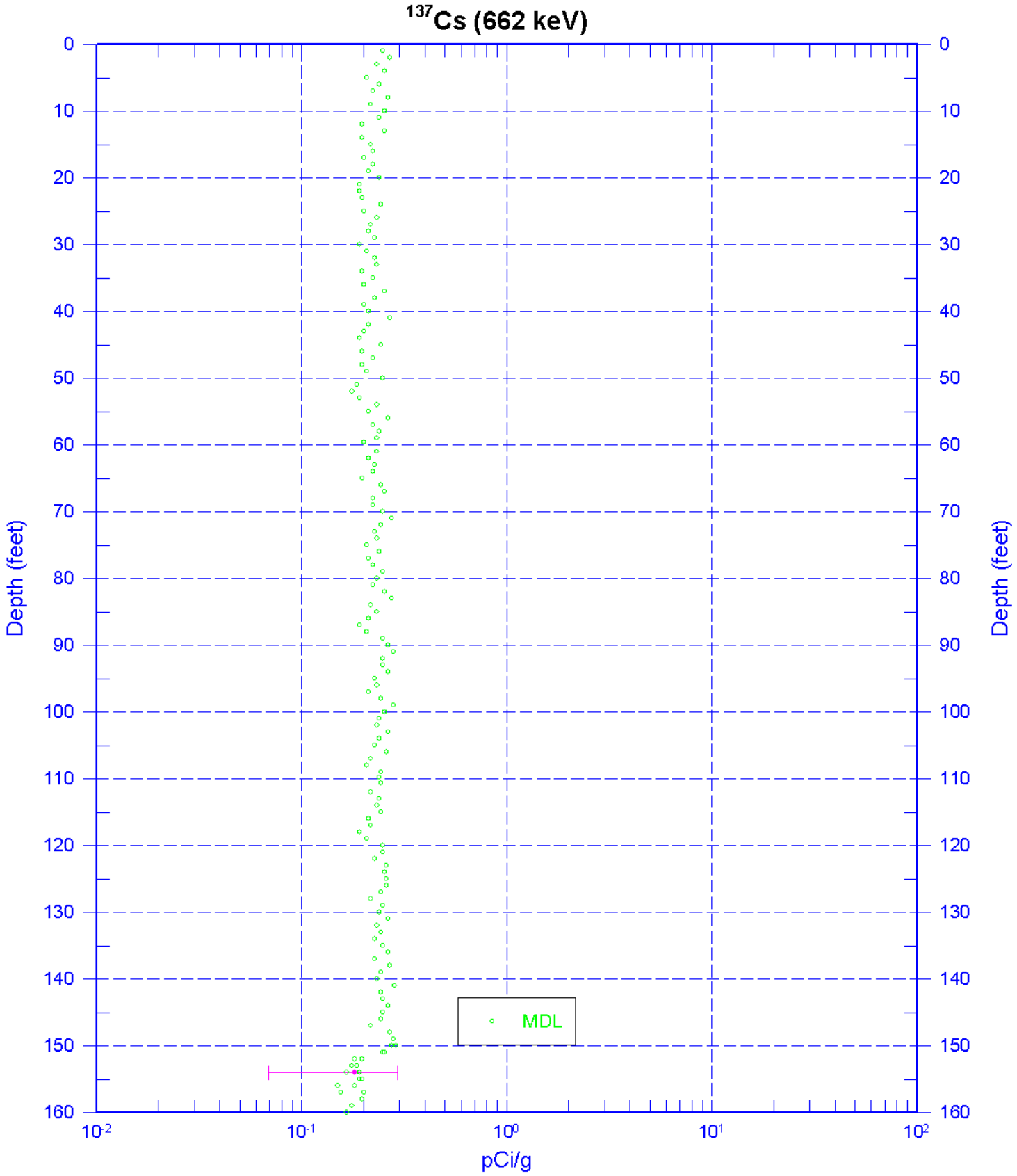
699-32-76 (C4975)
Manmade Radionuclides



Zero Reference - Ground Surface

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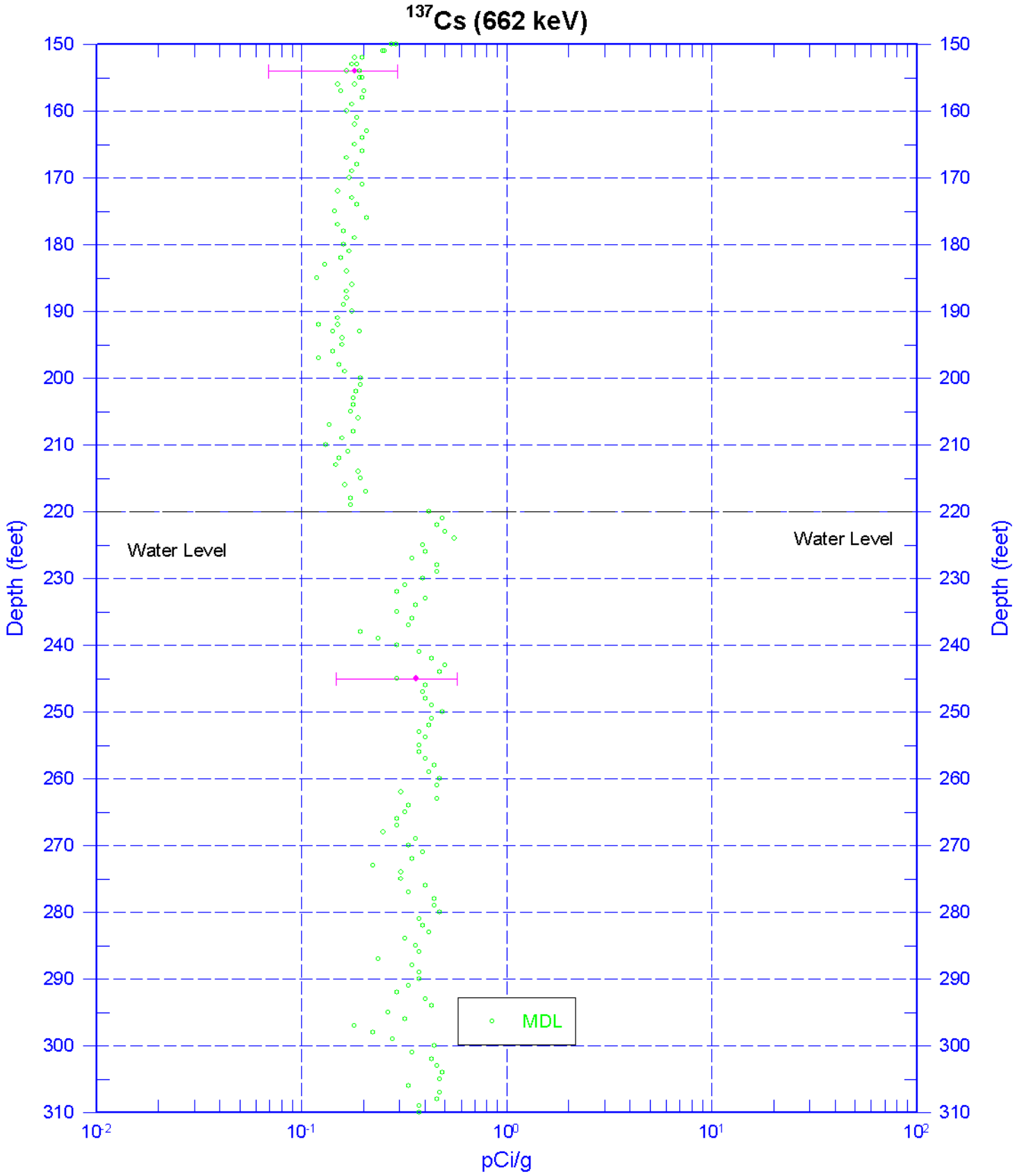
699-32-76 (C4975)
Manmade Radionuclides



Zero Reference - Ground Surface

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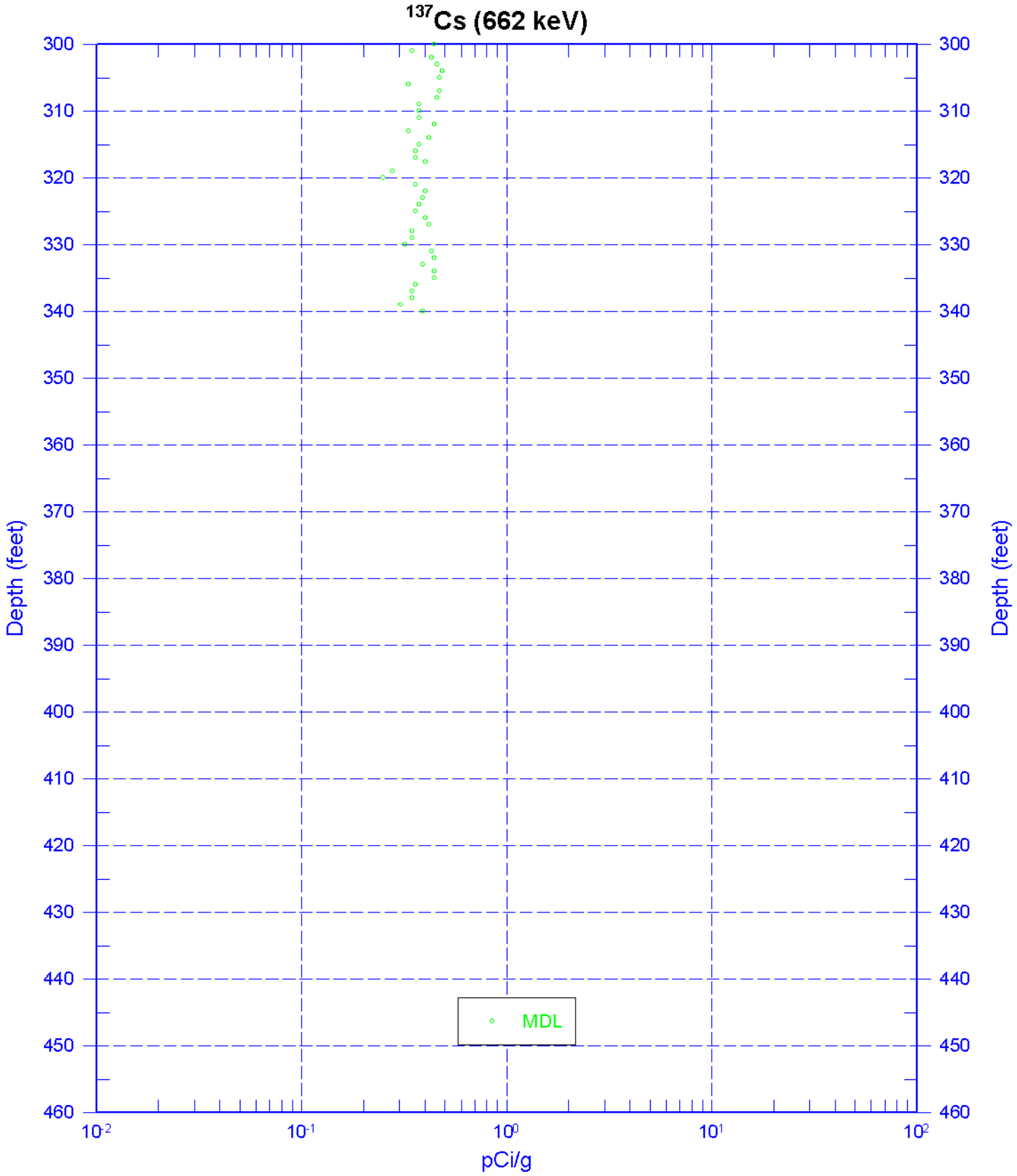
699-32-76 (C4975)
Manmade Radionuclides



Zero Reference - Ground Surface

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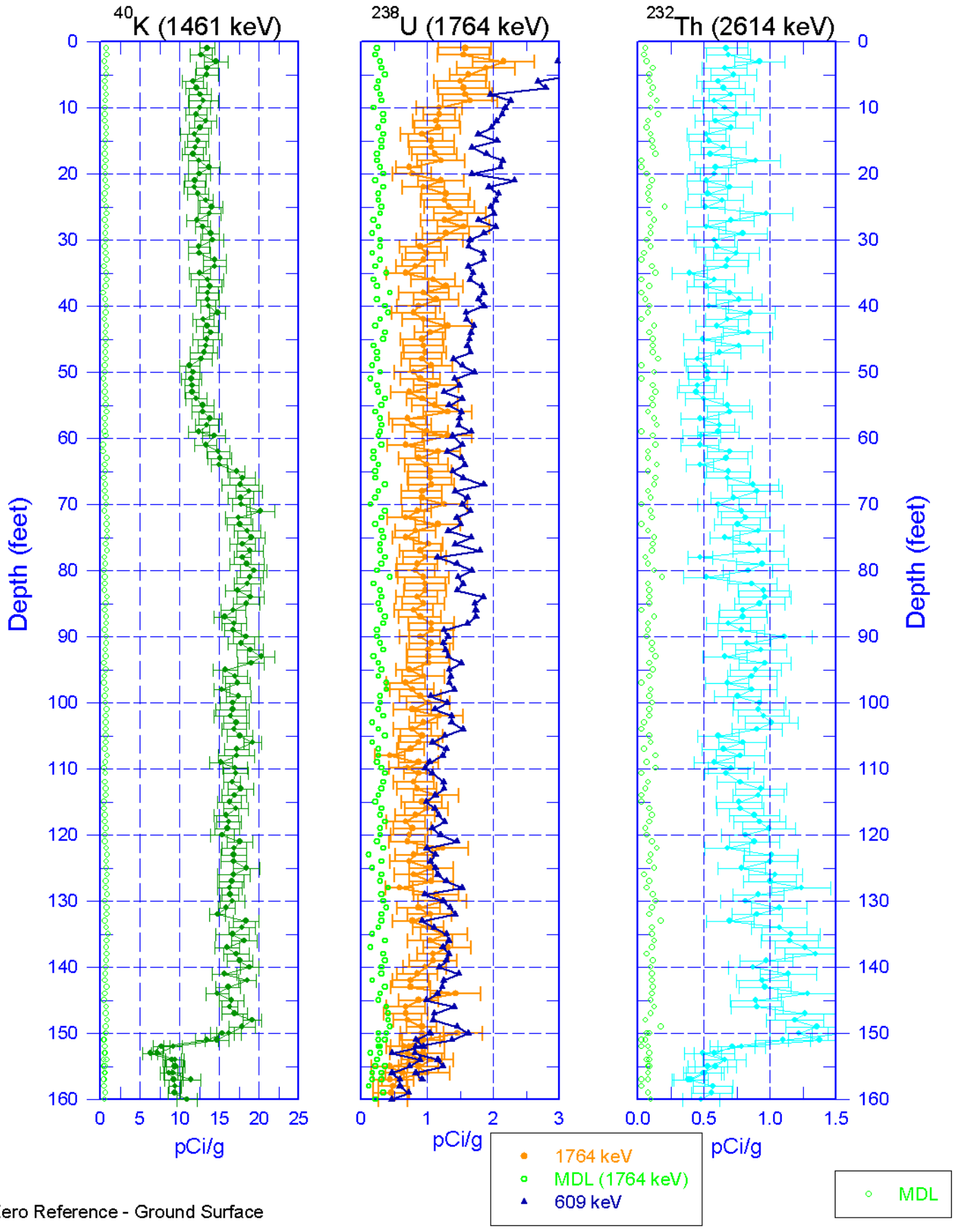
699-32-76 (C4975)
Natural Gamma Logs



Zero Reference - Ground Surface

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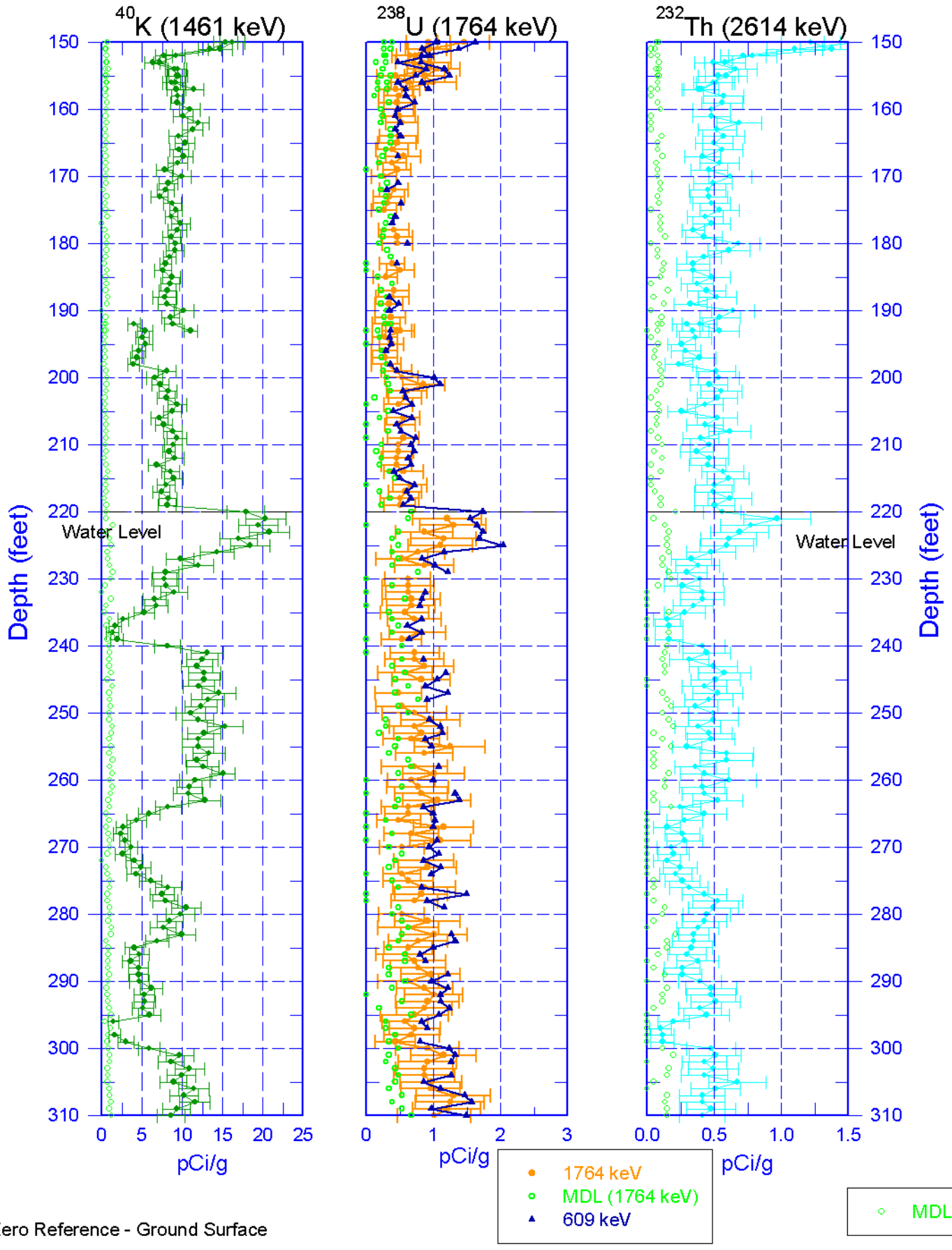
699-32-76 (C4975)
Natural Gamma Logs



Zero Reference - Ground Surface

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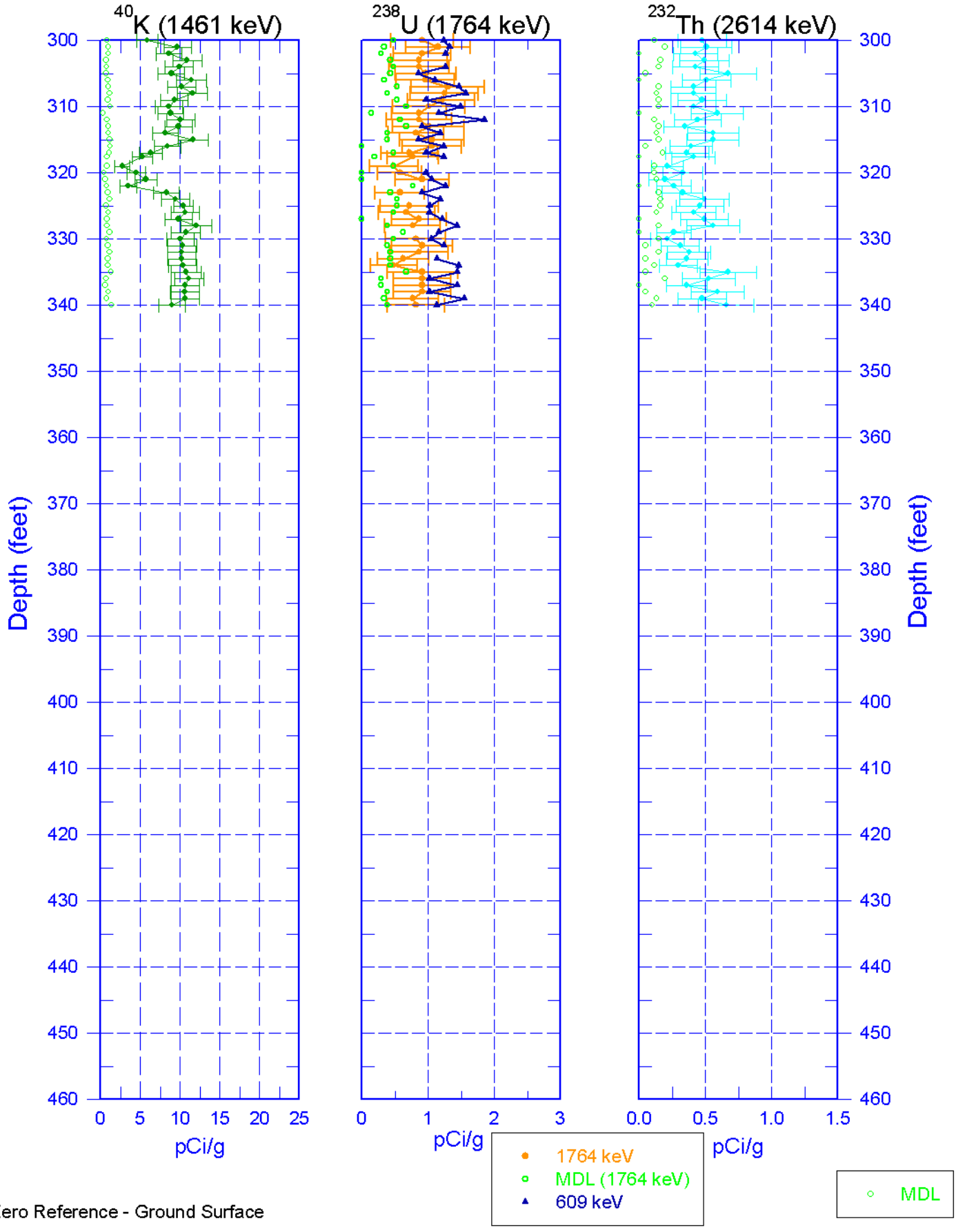
Natural Gamma Logs



Zero Reference - Ground Surface

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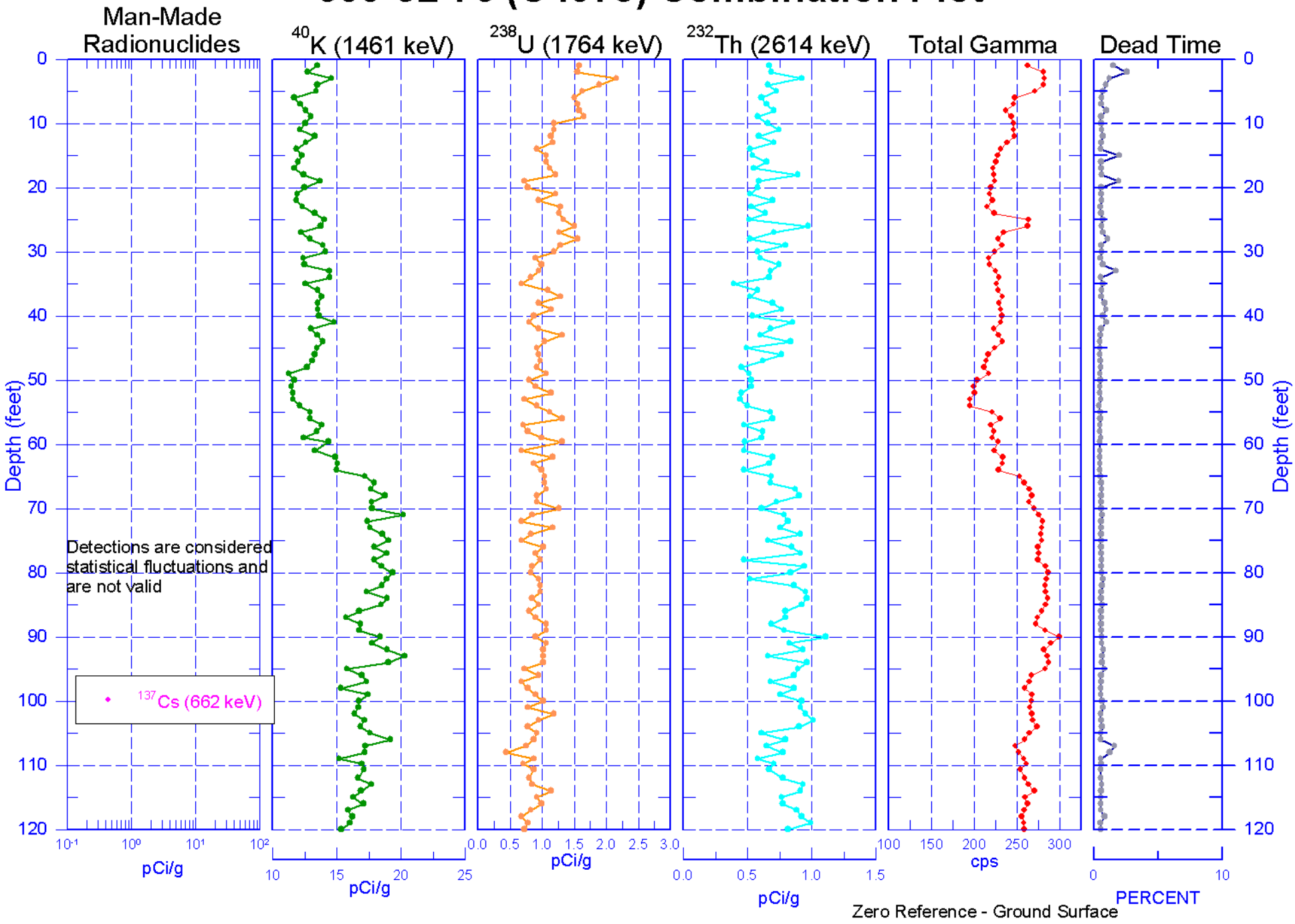
699-32-76 (C4975) Combination Plot



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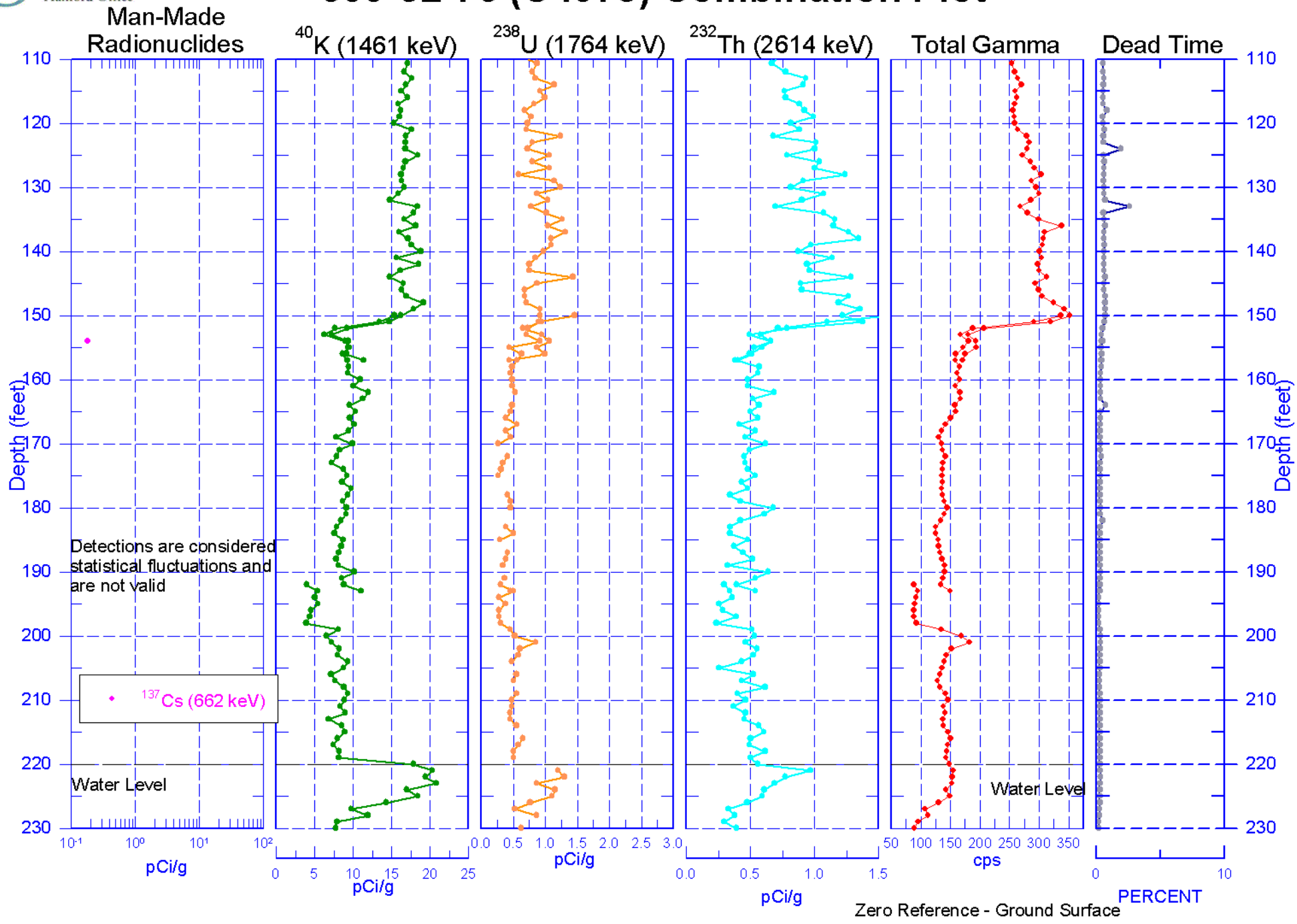

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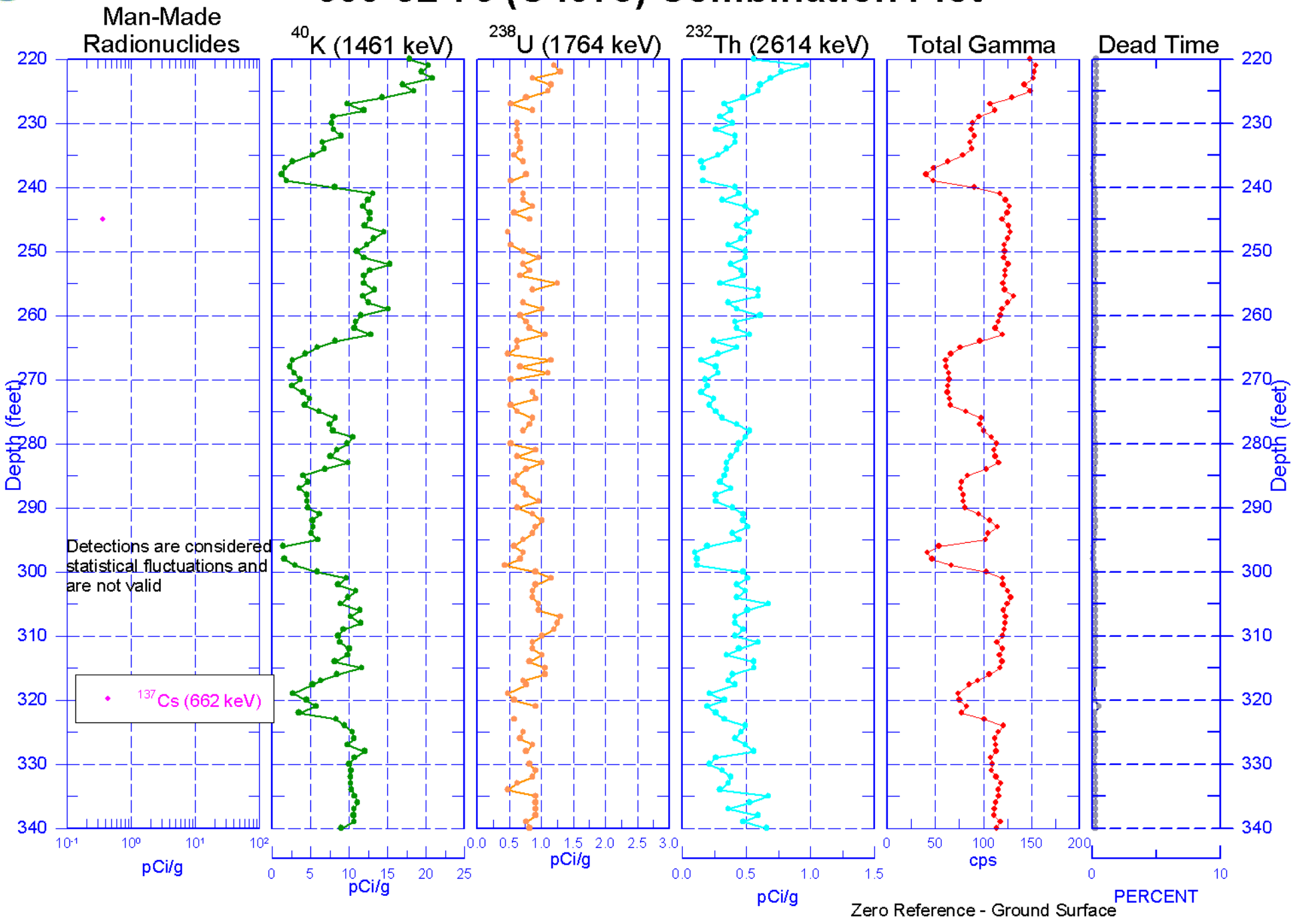

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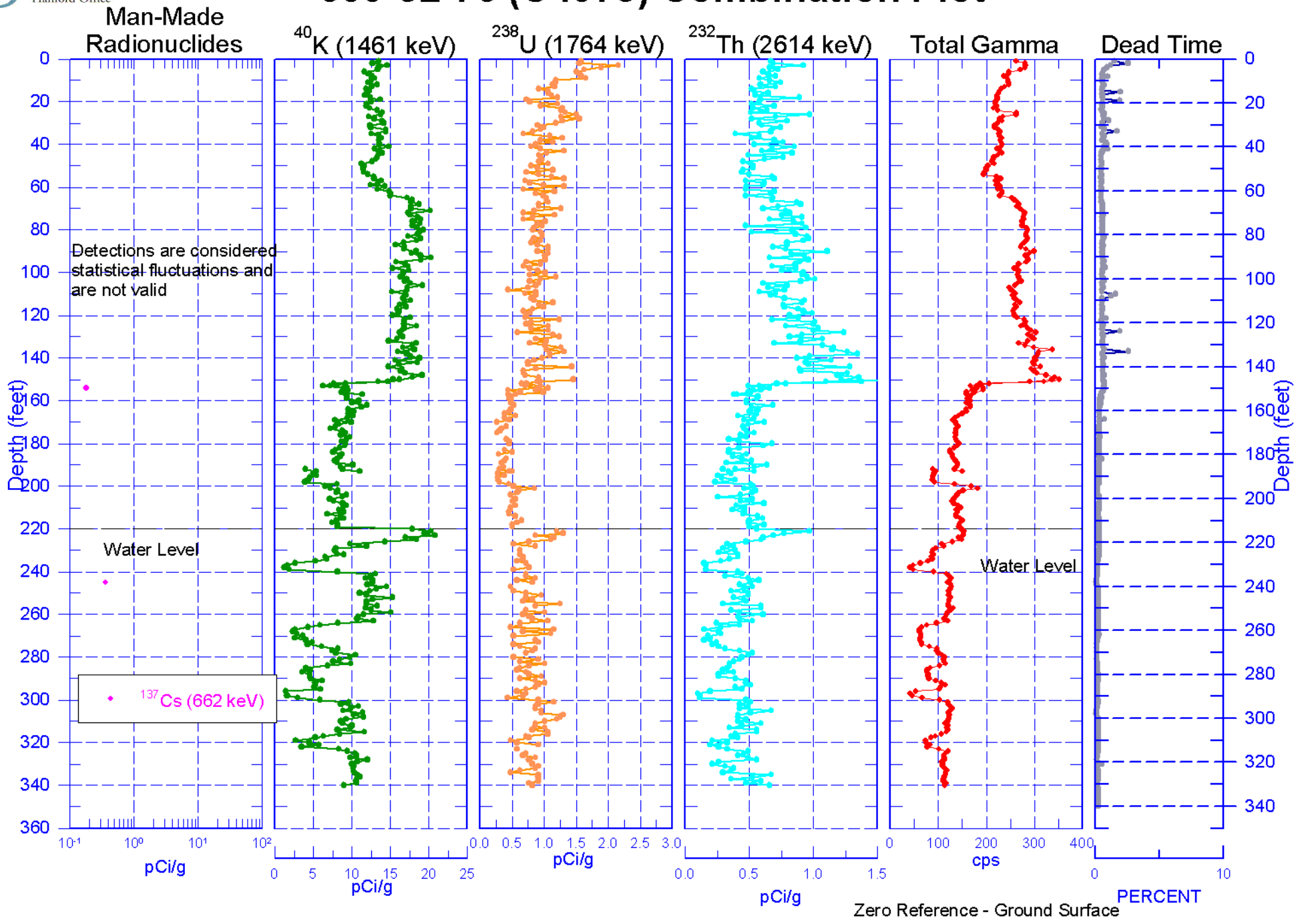
699-32-76 (C4975) Combination Plot



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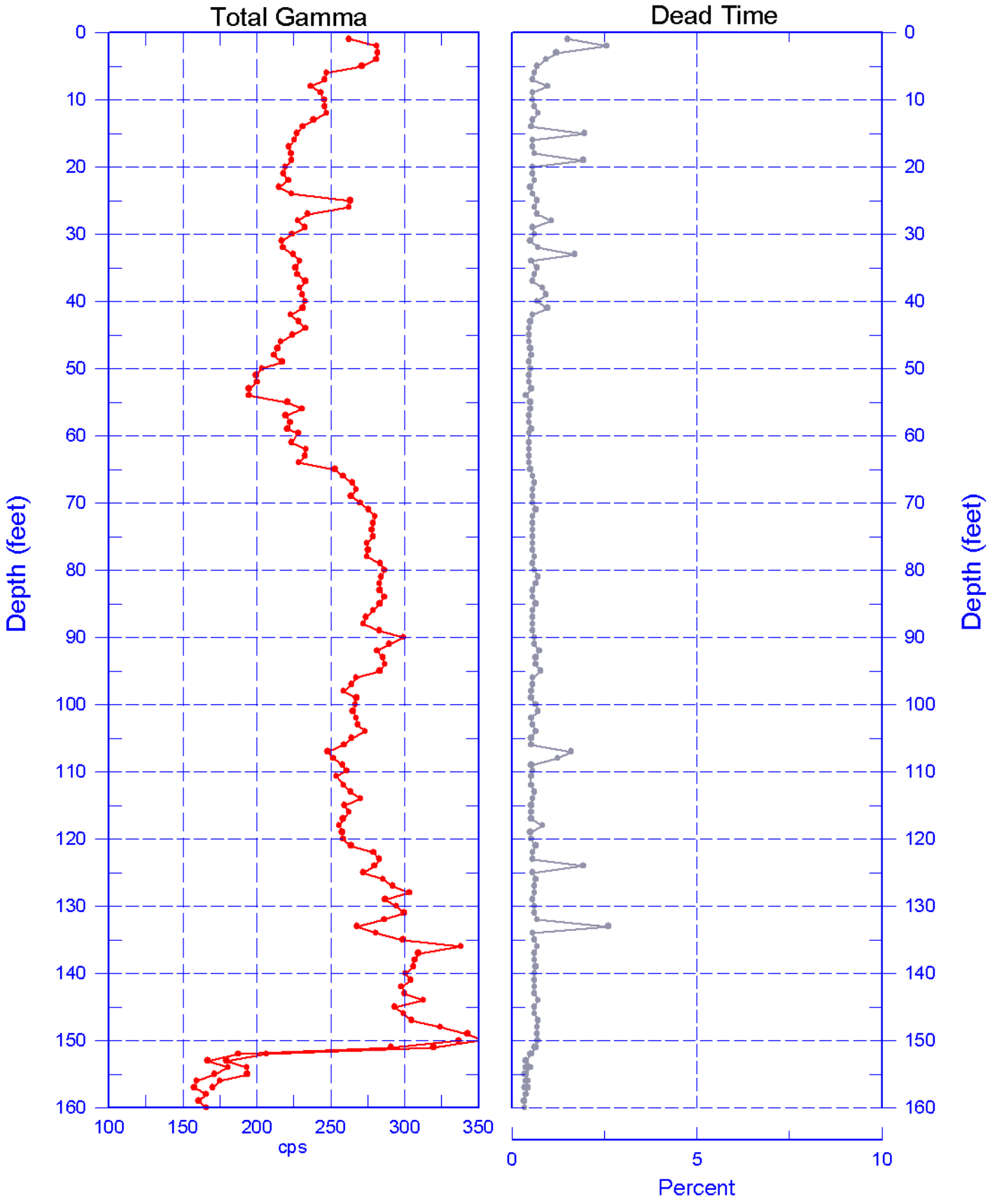
699-32-76 (C4975)
Total Gamma & Dead Time



Reference - Ground Surface

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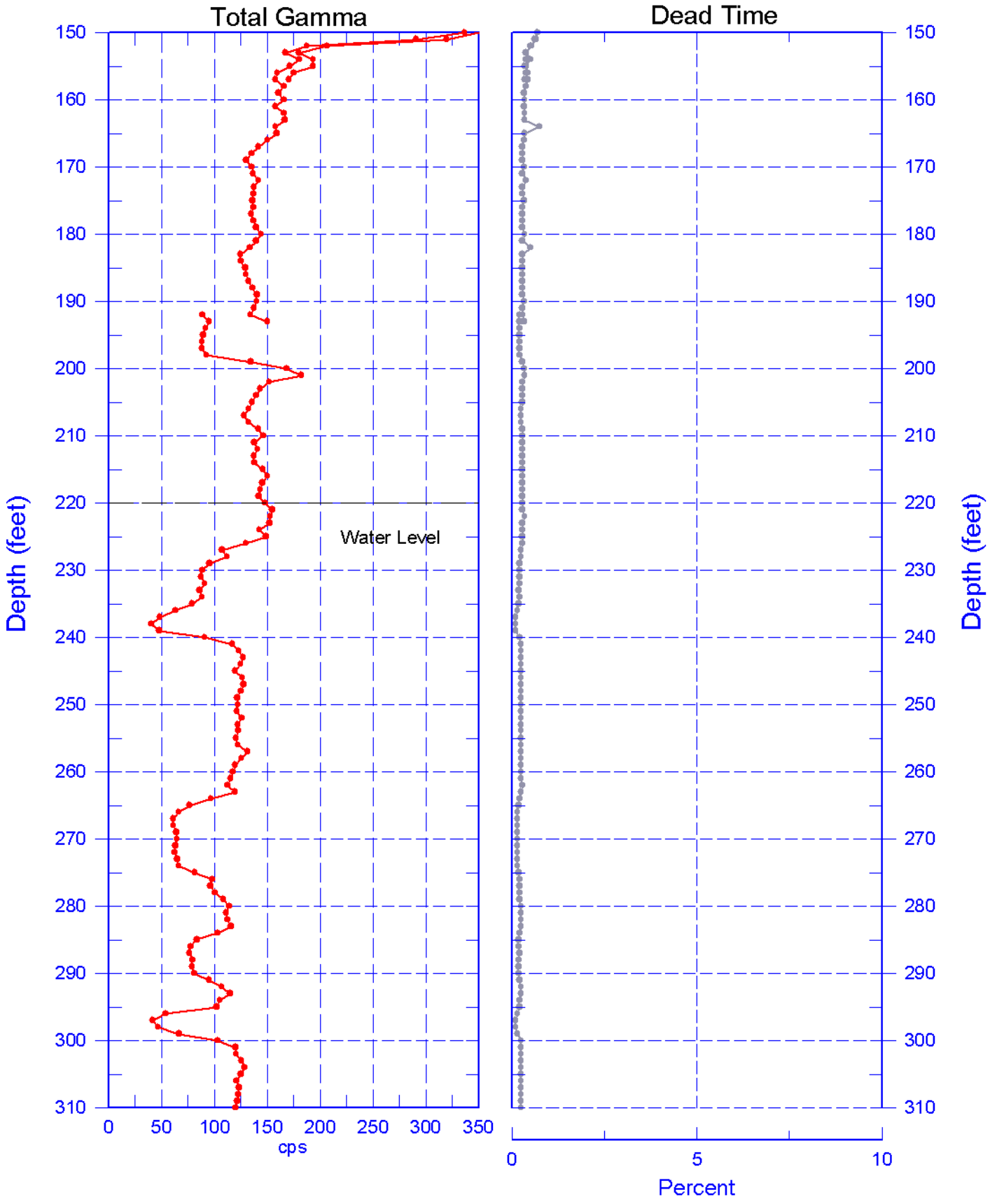
699-32-76 (C4975)
Total Gamma & Dead Time



Reference - Ground Surface

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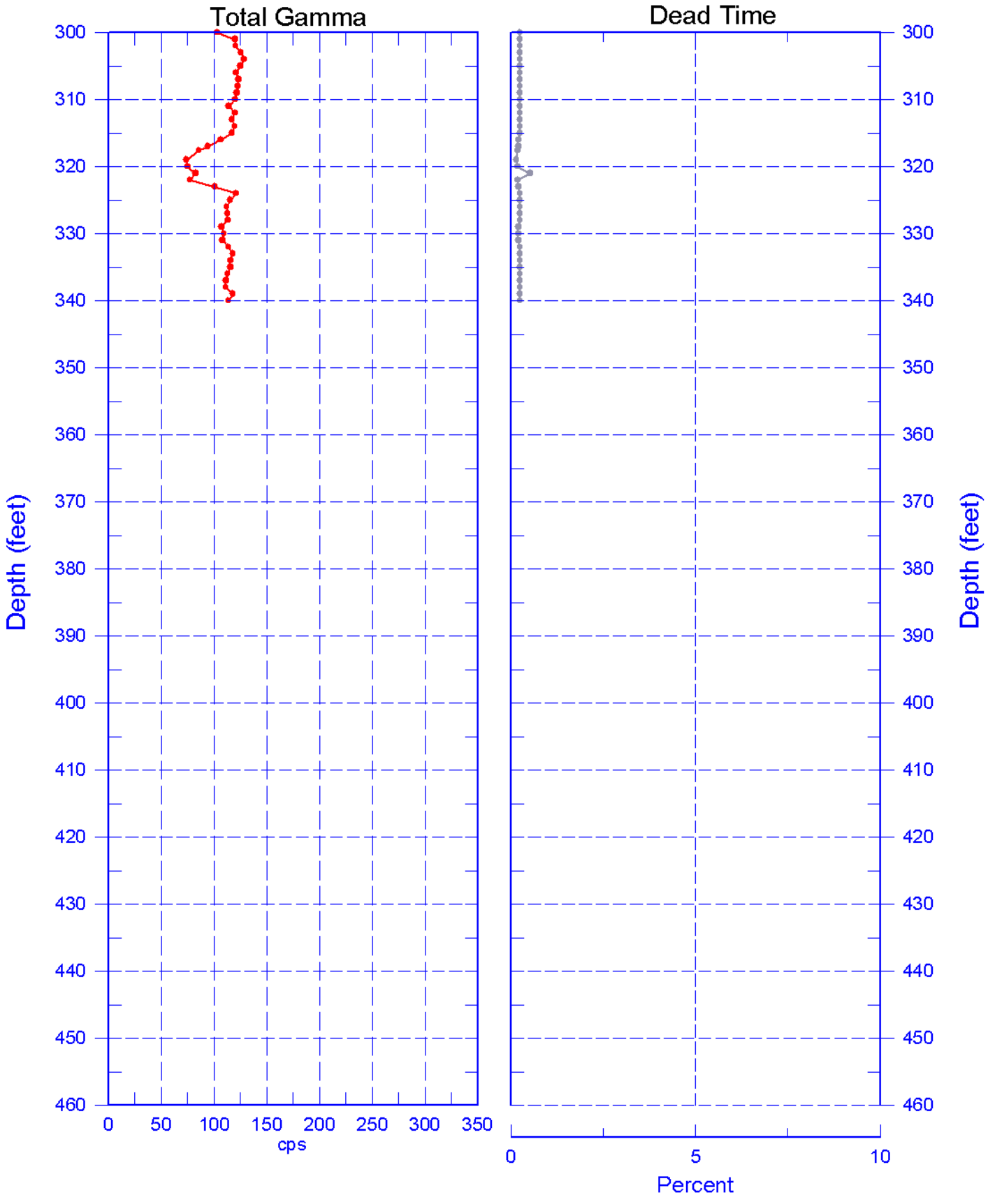
699-32-76 (C4975)
Total Gamma & Dead Time



Reference - Ground Surface

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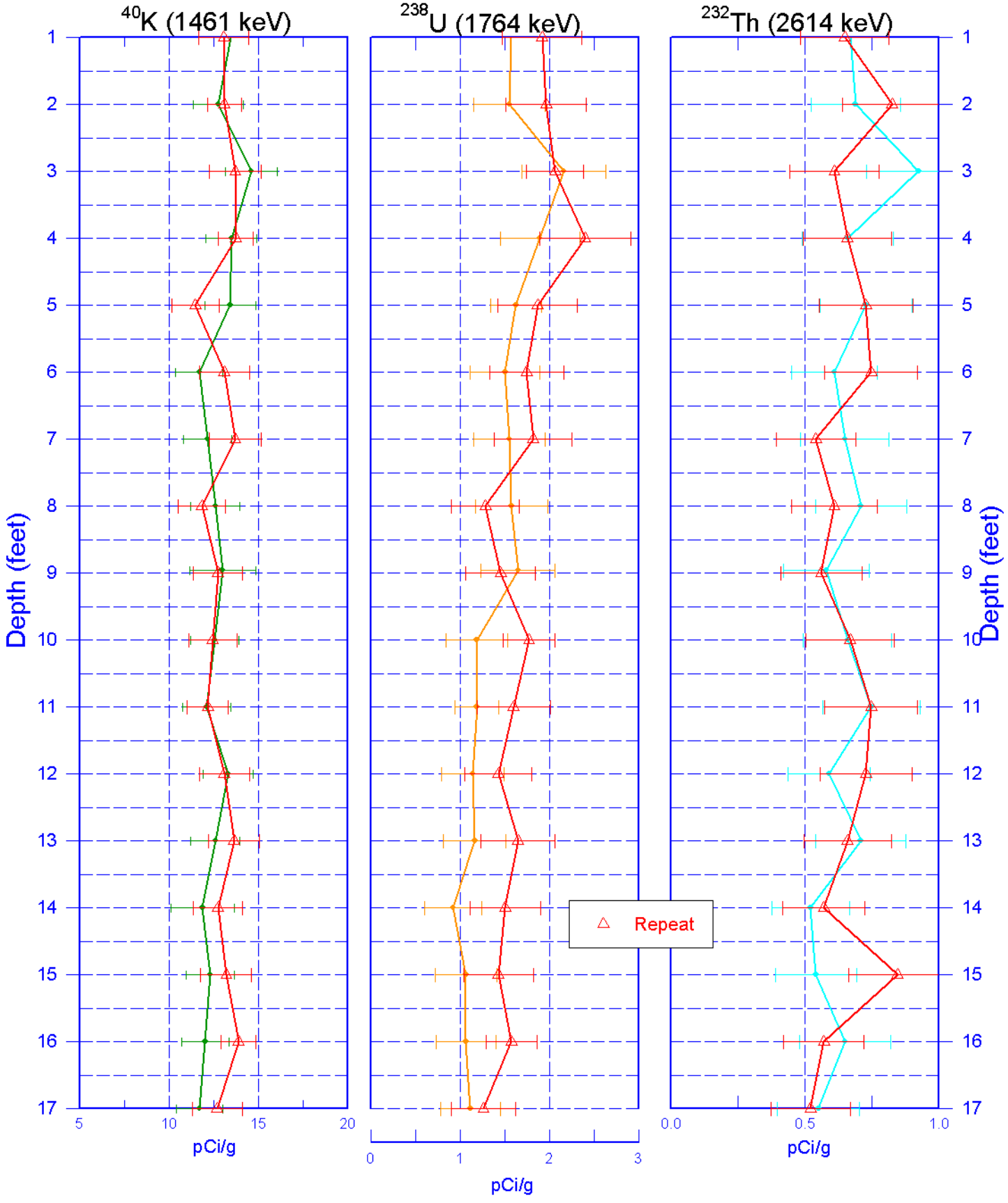
699-32-76 (C4975)

Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface

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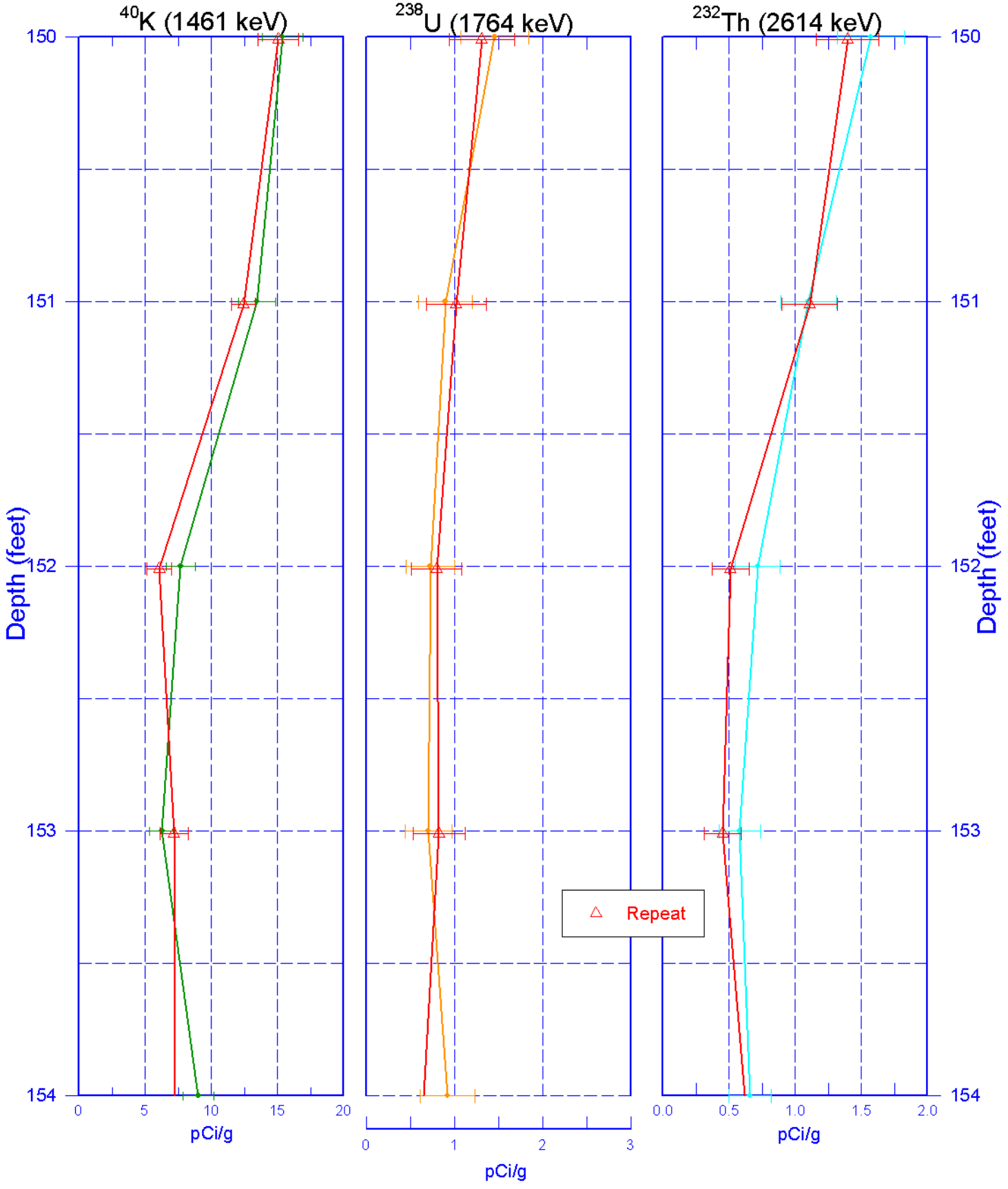
699-32-76 (C4975)

Repeat Section of Natural Gamma Logs



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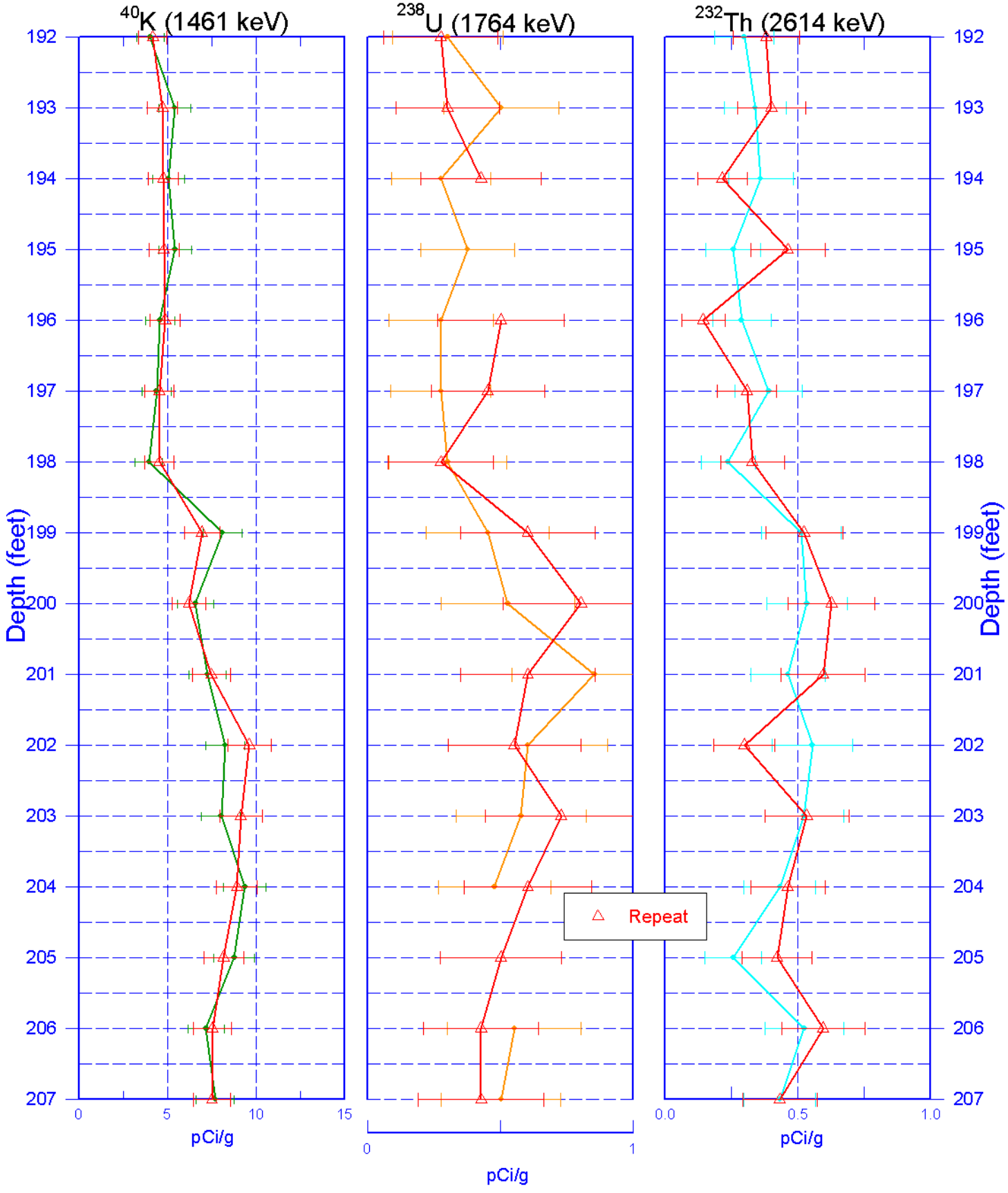
Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface